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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/511,934	02/24/2000	Hideaki Fukuda	ASMJP.032AUS	5598

7590

07/01/2002

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EXAMINER

KACKAR, RAM N

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 07/01/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

111-8

Office Action Summary	Application No.		Applicant(s)	
	09/511,934		FUKUDA ET AL.	
	Examiner		Art Unit	
	Ram N Kackar		1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 06 June 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 1-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Restrictions

1. Applicant's affirmation of election of claims 1-10 is acknowledged.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frankel et al (US Patent 6019848) in view of Kao et al (US Patent 6125859).

Regarding claims 1 and 4-10, Frankel discloses a susceptor with a heater (Fig 11) provided in a reaction chamber (Fig 1A- 200), conveyer for loading and unloading the wafers in to the reaction chamber (Col 25 line 1-3), cleaning device comprising a controller of gas (Fig 1D 153 and 163), vacuum controller (Fig 1D-165), a cleaning gas activator (Col 54 line 39 or Fig 1A 55), a program which instructs the controller to take the substrate out of the reaction chamber after processing and proceed with the chamber clean using activated cleaning gas (Fig 1D -157a and Col 54 line 8-29), evacuate the chamber after cleaning (Col 56 line 10-22), typical range of 500-800 C for deposition temperature (Col 53 line 38-41), cleaning gas being Fluorine (Col 9 line 13-15) and Fluorine radicals (Col 54 line 34), a plasma discharge region (Col 54 line 39), a remotely located plasma discharge chamber (Fig 1A -55), unwanted deposits like silicon oxide (Col 9 line 24-26), a plasma CVD apparatus (Col 2 line 31-34) and a shower head above the susceptor in the reaction chamber (Fig 5- 20). Frankel et al do not disclose the step of

inert gas flow and reduction of susceptor temperature prior to start of the cleaning gas activation. Kao et al disclose introduction of inert gas prior to introduction of reactive cleaning gas (Abstract) and preferred temperature range of pedestal during the cleaning process to be 400°-700° C (Col 17-line 59-63). There fore it would have been obvious to one having ordinary skill in the art at the time invention was made, to add the step of inert gas introduction for pressure stabilization and removal of particulates before introduction of reactive cleaning gas and the step of susceptor cooling to bring the temperature of the susceptor to recommended range (400-700 preferably 550) as per the teaching of Kao et al to the sequence of Frankel et al.

Regarding claims 2 -3 pertaining to temperature of susceptor before introduction of reactive gas, Kao et al teaches that the temperature should be typically in the range of 400-700 (Col 17-line 59-63). Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to make sure that the susceptor temperature was equal to a recommended value in the range, before introduction of reactive gas.

Response to Amendment

Applicants arguments filed on 06/06/2002 are considered but not found to be persuasive. Applicant's argument "that by employing a temperature and timing controller aluminum fluoride is not generated" is not found to carry any patentable weight in regards to claims drawn to an apparatus. Nevertheless, Frankel et al have considered the issue of Aluminum Fluoride (Col 31 line 60-67) and how it could be avoided. Applicant's other argument regarding Goodwin is removed.

Conclusion

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 703 305 3996. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703 308 1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9310 for regular communications and 703 872 9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0661.

RK
June 28, 2002


GREGORY MILLS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700